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REMARKS

Claims 1-20 are all the claims pending in the application. Claims 1, 2, 4, 5, 7, 8, and 10-20 stand rejected on prior art grounds. Claims 3, 6, and 9 are objected to as being dependent upon a rejected base claim. The amendment being submitted herein is based upon telephone communications between the Examiner and the undersigned attorney on April 21, 2004, where an agreement was reached on allowable claim language. As such, claims 1, 5, 7, 10, 11, and 16 are amended herein incorporating the agreed-upon claim language. Moreover, no new matter is being added. Applicants respectfully traverse the rejections based on the following discussion.

I. The Prior Art Rejections

Claims 1, 2, 5, 11, and 14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Galli (U.S. Patent 5,882,106). Claims 1, 4, and 16-20 stand rejected under 35 U.S.C. §102(b) as being anticipated by Link (U.S. Patent 4,998,888). Claims 7, 8, and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Galli in combination with Marholev et al. (U.S. Patent 6,085,342), hereinafter referred to as "Marholev". Claims 12, 13, and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Galli in view of Kazem-Goudarzi et al. (U.S. Patent 5,540,379), hereinafter referred to as "Kazem-Goudarzi". Applicants respectfully traverse these rejections based on the following discussion.

Amended independent claims 1, 5, 7, 10, 11, and 16 contain features, which are patentably distinguishable from the prior art references of record. Specifically, claims 1, 5, 11, and 16 generally recite, in part, "...wherein said (at least one) integrated circuit chip is disposed between said (at least one) battery and said package, and wherein said (at least one) integrated circuit chip lays on top of a portion of said package." Similarly, claims 7 and 10 generally recite,

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in part, "...wherein said at least one battery overhangs, and is larger than, said at least one integrated circuit chip, and wherein said at least one integrated circuit chip lays on top of a portion of said multi-chip module." These features are clearly shown in Figures 1, 2(a), 2(c), and 3 of the Applicant's application as originally filed.

In fact, these features are simply not taught or suggested in the prior art references of record. Namely, neither Galli, Link, Marholev, or Kazem-Goudarzi either alone or in combination with one another teach or suggest anything about the integrated circuit chip laying on top of a portion of the package or multi-chip module.

As shown in Figures 2, 3, 10, and 11A of Galli, the battery 106 is clearly positioned between the housing 108 and the integrated circuit chip 104 (the integrated circuit chip is mounted on the circuit board 198 as described in col. 6, lines 64-66 of Galli). The Office Action equates the housing 108 of Galli to the package of the claimed invention. However, the housing 108 of Galli is a two-piece housing (see Figs. 2 and 3 of Galli) as opposed to the package of the claimed invention, which is not embodied as two separate pieces. Additionally, if the Office Action does equate the two-piece housing 108 of Galli to the package of the claimed invention, then clearly, the integrated circuit chip 104 is not mounted on a top portion of the housing 108. Rather, the integrated circuit chip 104 in Galli is sandwiched between an upper housing portion 108 and a lower housing portion 108.

Furthermore, as shown in Figures 1-3 of Link, the integrated circuit chip is clearly positioned underneath the package, and not on top of the package. Therefore, in both Galli and Link the configuration of the respective devices are clearly different from the configuration of the claimed invention, and as such the claimed invention is patentably distinct from either Galli or Link.

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The advantages of the configuration provided by the claimed invention are numerous. For example, the battery is directly attached to the silicon chip by using soldering techniques. This configuration produces the lowest resistance and inductance between the battery terminals and chip power supply pads, thus the noise generated by inductance is minimized and the resistance loss of the power supply current is minimized.

Other advantages of the integration of chips and a battery according to the configuration of the claimed invention include that the configuration provided by the claimed invention greatly reduces the overall system size. Second, the configuration provided by the claimed invention improves the power supply efficiency, since the battery chip is located very close to the system. Hence, the energy waste due to loss and thermal dissipation, caused by having a power supply through a long resistive power bus, is eliminated. Another advantage is that power management becomes easier, since the battery chip includes battery cell arrays in addition to relevant control circuitry.

Yet another benefit is the noise, due to the power supply, is reduced. Moreover, the configuration of the claimed invention allows for decoupling capacitors and regulators to be added, which can also be integrated on the battery chip to manage the noise. Still another advantage of the configuration of the claimed invention is that the thermal effect caused by the battery charging and discharging is minimized. Additionally, integrating the battery controller and voltage regulator into the packaging instead of using an external chip minimizes the thermal effect. Moreover, the temperature control to operate the battery is more efficient. Along these lines, by reducing battery heat-up during charging, the battery life span is increased, and the charging efficiency is greatly improved.

These numerous benefits are restricted to the claimed invention, and as such, the prior art

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devices simply cannot and have not achieved the efficiencies and advantages achieved by the claimed invention. As such, claims 1, 5, 7, 10, 11, and 16 are amended herein to further describe the invention and to further distinguish the invention from the cited prior art of record, namely Galli and Link. Moreover, the Applicants note that all claims are properly supported in the specification and accompanying drawings, and no new matter is being added.

Therefore, Applicants respectfully submit that the cited prior art do not teach or suggest the features defined by amended independent claims 1, 5, 7, 10, 11, and 16 and as such, claims 1, 5, 7, 10, 11, and 16 are patentable over either Galli or Link, or a combination of Galli and Marholev, or a combination of Galli and Kazem-Goudarzi. Further, dependent claims 2-4, 6, 8-9, 12-15, and 17-20 are similarly patentable over either Galli or Link, or a combination of Galli and Marholev, or a combination of Galli and Kazem-Goudarzi, not only by virtue of their dependency from patentable independent claims, respectively, but also by virtue of the additional features of the invention they define. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

II. Formal Matters and Conclusion

With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims.

In view of the foregoing, Applicants submit that claims 1-20, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

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Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 50-0510.

Respectfully submitted,

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